

Hypselostoma holimanae New Species, a Pupillid Land Snail from Thailand

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ABSTRACT

Hypselostoma holimanae new species (Gastropoda, Pulmonata, Pupillacea, Vertiginidae) is described from a limestone range near Kanchanaburi, Thailand. Its morphological characteristics are distinct to the extent that no close relationship between this form and other members of the genus is apparent. *Hypselostoma tubiferum* (Benson, 1856) from Burma is its closest phylogenetic and geographic congener. The two species are alike in details of sculpture and umbilical width, but differ widely in shell shape and aperture barriers. Similarities of reduced apertural dentition among other species of *Hypselostoma* are considered to be due to convergence.

INTRODUCTION

The land snail fauna of Thailand is very poorly known. The genus *Hypselostoma* is widely distributed from Burma through Cambodia, Vietnam, Malaya, the Loo Choo Islands and the Philippine Archipelago. Yet not a single species has hitherto been recorded from Thailand. The species described in this paper was collected by Stephen C. Holiman while serving as a Peace Corps volunteer in Thailand. During his few opportunities of leisure, Mr. Holiman collected mollusk specimens for his mother, Mrs. Stanley (Bonnie) Holiman of Jacksonville, Florida, who has assembled a private collection of fair importance because of the data that accompanies the specimens. The mollusks from Thailand were submitted to us by Mrs. Holiman for identification. The new species of *Hypselostoma* described in this paper shows strong similarity to the generic type species from Burma, and differs conspicuously from other known species. We are honored to name this snail after Mrs. Holiman in recognition of her bringing this species to our attention.

Hypselostoma holimanae new species
(figures 1-6)

Description: Shell small, about 2.6-2.9 mm wide and 2.3-2.6 mm high; about 0.85-0.95 times as high as wide. Shell turban-shaped with a moderately long conical spire (figures 1-3, holotype). Last whorl conspicuously enlarged, and with a distinct peripheral angle and a basal

angle. Last whorl flat below peripheral angle, and strongly shouldered above. Occasional specimens may be weakly furrowed below periphery. Last whorl ascending at about 10° to longitudinal axis of spire (figures 2, 4). Neck of last whorl becoming narrowed behind aperture, and extending forward for about 1/5 of minor diameter of last whorl (figure 3); indented externally over junction of angulo-parietal lamella and slightly so over columellar lamella. Base of shell broadly umbilicate due to lateral expansion of last whorl. Umbilicus about 0.40-0.53 times minor diameter of last whorl as measured across the basal angle. Whorls 4.6-4.9. Protoconch consisting of about 1.5 whorls that appear smooth under light microscopy; at higher magnifications the whorls are sculptured with a dense mesh of fine reticulating threads that have an underlying spiral arrangement (figure 5). Whorls of teleoconch sculptured with raised spiral threads that are nearly uniformly distributed over the surface of the shell (figure 4). Threads weak but distinct on spire; most conspicuously developed on last whorl (figure 6). Spiral threads interrupted at irregular intervals by incremental growth striations, which in some specimens may cause the spiral sculpture to appear cancellate or beaded on the spire. Color dark brown with a light brown aperture and white lamellae within the aperture. Face of aperture translucent with fine radiating brown lines due to raised spiral threads on opposite surface. Peristome broadly expanded and nearly uniformly wide around aperture. Aperture barrier with four teeth located on inner rim of the aperture just behind expanding peristome and arranged opposite each other in a cross-configuration. Angulo-parietal lamella rectilinear, forming a single short undulating blade; bifid as is typical for genus, with angular segment smaller and separated from parietal portion by a weak notch. Palatal and basal plicae short and laterally flattened; confined to inner rim of peristome. Columellar lamella tubercular and located on a slight callus.

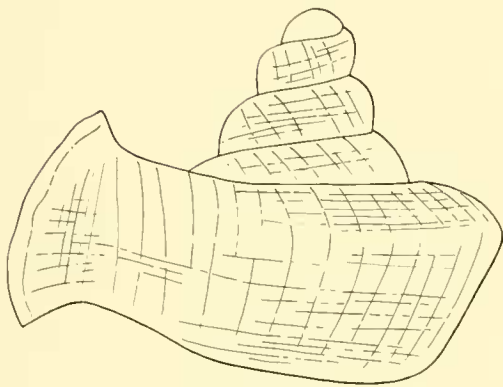
Measurements in mm for the holotype and three paratypes (UF 113428) selected to show variation follow. The minor diameter is the transverse width of the body whorl posterior to the neck of the aperture. Other measurements were made of standard parameters.



1



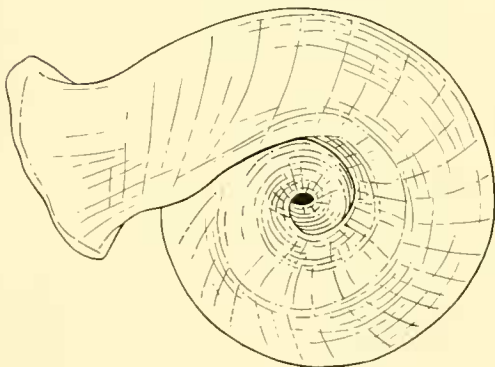
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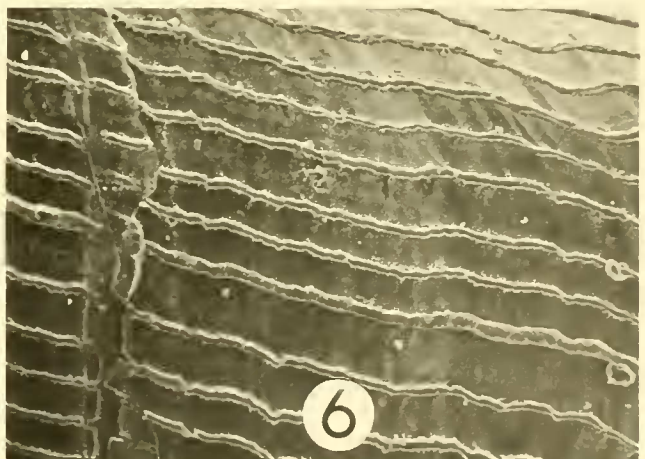
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6

Figures 1-6. *Hypselostoma holimanae* new species. 1-3. Holotype (UF 113427), $\times 26$. 4-6. Paratype (UF 113453). 4. $\times 40$. 5. $\times 120$. 6. $\times 160$.

Specimen	Height	Maj. w	Min w	Aper w	Umbil	Whorls
Holotype	2.4	2.6	2.4	1.4	1.2	4.7
Paratype	2.3	2.7	2.3	1.4	0.9	4.5
Paratype	2.3	2.6	2.3	1.2	1.0	4.6
Paratype	2.6	2.9	2.5	1.6	1.0	4.9

Type locality: Thailand, Kanchanaburi Province, small limestone range on the west border of the Kanchanaburi Agricultural College, about 15 km west of Kanchanaburi. Holotype: UF 113427; collected March 15, 1987 by Stephen Holiman. Paratypes: UF 113428 (12), UF 113483, Mahidol University Malacology Collection, Bangkok (12), and the private collections of Harry G. Lee (12) and Bonnie Holiman (12).

The specimens constituting the type series are recently dead shells. They were collected at the height of the dry season from leaf-litter in a forested knoll at the top of the limestone range.

COMPARISONS

Hypselostoma Benson, 1856 belongs to a group of genera that also includes *Boysidia* Anvey, 1881, *Paraboysidia* Pilsbry, 1917, *Gyliotrachela* Tomlin, 1930, *Aulacospira* Moellendorff, 1890, *Anauchen* Pilsbry, 1917, and *Systenostoma* Bavay and Dautzenberg, 1909. These genera were monographed by Pilsbry (1917). More recently, Jutting (1950) reviewed the known species of the first four genera. Members of this group have protoconch sculpture similar to that described above for *H. holimanae*. The variation of this sculpture within the group and its phylogenetic significance will be discussed elsewhere (Thompson, in preparation). The classification of species within these genera is sometimes problematic, and no one who has worked with the group seems to have been comfortable with the systematic arrangements of previous authors (Pilsbry, 1917; Jutting, 1950, 1961; Solem, 1981; Thompson & Dance, 1983). Much of the problem centers on the emphasis that is placed on the development of the parietal and angular lamella, the reduction of the aperture barrier, the sculpture on the teleoconch and the degree to which the aperture is attached to or free of the previous whorl. *Hypselostoma holimanae* is placed within *Hypselostoma* because of the fused angulo-parietal lamella, the free aperture and the spiral sculpture of the teleoconch. The angulo-parietal lamella is weaker than in most other species of the genus, and the aperture barrier in general approaches the condition that characterizes *Anauchen*. However, all of the species of *Anauchen* lack any indication of an angular lamella and none have raised spiral sculpture on the teleoconch.

Few species of *Hypselostoma* have thus far been described from the mainland on southeast Asia. Pilsbry (1917) discussed the species known at that time. More recently, Jutting (1950) briefly reviewed the genus and described several additional species (1950, 1961, 1962). *Hypselostoma*, as used by both Pilsbry and Jutting, is a polyphyletic assemblage that contains species belonging to at least three genera. Four species (*H. terae* Tomlin,

1939, *H. megaphona* Jutting, 1949, *H. elaphis* Jutting, 1949, *H. perigyra* Jutting, 1949) were transferred to *Boysidia* (*Dasypupa*) by Thompson and Dance (1983:109). Three others related to *H. dayanum* Stoliczka, 1871 belong in another genus (Thompson, in preparation).

The remaining species placed in *Hypselostoma* differ strikingly from *H. holimanae*, although *H. tubiferum* (Benson, 1856) from Burma appears to be the most closely related congener. It has a similarly broad umbilicus and similar spiral sculpture on the teleoconch, though not as strong. Because of these similarities the two species are considered to be more closely related than either is to other known species within the genus. The two differ in several conspicuous features. *Hypselostoma tubiferum* is much more depressed, the aperture is turned upward above the apex of the spire and the aperture barrier consists of 6–7 lamellar teeth (see Pilsbry, 1917 for a description and illustrations). *Hypselostoma holimanae* differs from all other mainland species by its strong spiral sculpture, its reduced aperture barrier with tubercular columella lamella, its strong circumumbilical basal keel, and its broad umbilicus. Some Philippine species (*H. sibuyanicum* Moellendorff, 1896, *H. quadrasi* Moellendorff, 1896, *H. roebeleni* Moellendorff, 1894, and *H. latispira* Thompson and Auffenberg, 1984) are similar to *H. holimanae* in that the aperture barriers have been reduced to denticles, although they are not as weak as in *H. holimanae*. None has sculpture as strongly developed as *H. holimanae*, none has a basal keel circumscribing the umbilicus, nor are any as widely umbilicate. Other differences that separate *H. holimanae* from these Philippine species are the shape of the shell and the contour of the whorls. *Hypselostoma roebeleni* and *H. latispira* are very depressed species in which the up-turned aperture reaches almost to the level of the apex of the spire. *Hypselostoma sibuyanicum* and *H. quadrasi* have more slender shells with regularly increasing whorls, and both are narrowly rimate. The combination of all of these morphological differences indicate that the similar aperture barriers of the Philippine species and *H. holimanae* have evolved independently through tooth reduction from more complex ancestral conditions, and that no close relationship can be inferred on the basis of these barriers.

ACKNOWLEDGEMENTS

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